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The Course that Camel Surra runs in Ponies, Buffaloes and other Animals

BY

H. E. CROSS, M.R.C.V.S., D.V.H., A.Sc.

Camel Specialist, Sohawa, Punjab

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The Course that Camel Surra runs in Ponies, Buffaloes and other Animals.

(*Received for publication on 22nd March 1920.*)

During investigations into surra amongst Silladar Camel Corps and other military camels, it had often been noticed that although a large number of camels were detected to be suffering from surra, amongst the ponies and mules, which were kept in close proximity to camels during the fly season, practically no cases of surra had been observed.

It appeared to me it was possible that ponies and mules did become infected, but that it was probable that these animals when infected with camel surra, did not show the same symptoms as are usually met with in horse surra and consequently the disease may have escaped detection.

It was decided, therefore, to ascertain the course that camel surra runs in ponies and other animals, and with this object in view, ponies, buffaloes, goats, sheep, dogs, rabbits and guinea pigs were inoculated with blood from camels suffering from surra and a daily blood examination of each animal was made and a history sheet of each kept.

The animals were kept under very favourable conditions ; the ponies were not worked but were given regular exercise.

Sometime after these experiments were started a severe outbreak of surra occurred amongst the camels of a Silladar Camel Corps.

Though many of the camels were infected with surra and tabanidæ were at the time very numerous, the ponies attached to the Corps (kept only a short distance away from the camels, circumstances over which the Commandant of the Corps had no control did not permit of the ponies being kept far away from the camels) were in excellent condition and appeared in perfect health. I asked the Commandant to have a daily blood examination made of these ponies and he very kindly consented to do so.

After a time the Commandant informed me that 5 out of the 14 ponies had been detected to be suffering from surra.

Unfortunately the 5 ponies were immediately shot when detected to be surra-infected, so they could not be procured to be kept under observation.

Pony No. 1.

Aged 8 months when inoculated with 1 c.c. blood from camel suffering from surra.

11 days after inoculation, trypanosomes appeared in the blood.

718 days after inoculation, partial paralysis of hind legs.

761 days after inoculation, unable to get up without assistance.

878 days after inoculation, died.

This pony improved in condition, and was in fair condition (718 days after inoculation) when partial paralysis of the hind legs was observed. After this he began to lose condition and got weak. He got gradually weaker and finally was unable to get up, and died 2 years 8 months 28 days after inoculation.

Post mortem examination revealed nothing but emaciation.

Lived 2 years 8 months and 28 days after being inoculated.

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st		18th	
2nd	15	19th	6
3rd	6	20th	7
4th	3	21st	26
5th	9	22nd	83
6th	6	23rd	1
7th	5	24th	17
8th	1	25th	3
9th	4	26th	26
10th	8	27th	27
11th	5	28th	7
12th	25	29th	24
13th	20	30th	10
14th	5	31st	42
15th	12	32nd	39
16th	14	33rd	51
17th	5	34th	124
18th	21		died 163 days after last paroxysm.

Fig. 1. Pony No. 2. (Photograph taken 3 years, 2 months and 4 days after inoculation.)

Fig. 2. Pony No. 3. (Photograph taken 3 years, 7 months and 25 days after inoculation.)

Pony No. 2.

Aged 1 year when inoculated with 1 c.c. blood from camel suffering from surra.

Five days after inoculation, trypanosomes appeared in the blood. The pony was in poor condition when inoculated, but has improved and is at present in very fair condition. Up to the 19th paroxysm the intervals between the paroxysms were short but the intervals between the last 3 paroxysms were very long and from the last paroxysm up to the present time (460 days) no trypanosomes have appeared in the blood. Two guinea pigs were inoculated with a small quantity of blood; 354 days after the last paroxysm, both showed trypanosomes in their blood, showing that the blood of this pony was still infective. The pony appears to be in normal health and has been under observation 3 years 2 months 19 days. (*See* fig. 1 of the Plate.)

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st		11th	
	2		3
2nd		12th	
	1		13
3rd		13th	
	1		7
4th		14th	
	4		4
5th		15th	
	20		19
6th		16th	
	12		12
7th		17th	
	13		21
8th		18th	
	1		59
9th		19th	
	5		132
10th		20th	
	39		311
11th		21st	
			460 till 31-1-1920 alive.

Three years 2 months 19 days under observation.

Pony No. 3.

Aged 6 months old when inoculated with 1 c.c. of blood from a camel suffering from surra.

Eight days after inoculation, trypanosomes appeared in the blood.

This pony was in fair condition when inoculated with surra and has never lost condition; at the present time (3 years 8 months 10 days after inoculation) he is in excellent condition.

The interval between the 9th and 10th paroxysm was 837 days. 175 days after the 9th paronysm one guinea pig and one rabbit were injected, with a small quantity of blood; after 76 days the rabbit was destroyed, no trypanosomes having been found; the guinea pig died after 45 days but no trypanosomes were found in the blood.

251 days after the 9th paroxysm a guinea pig and a rabbit were injected with a small quantity of blood; they were destroyed after 61 days, no trypanosomes being found in the blood of either.

In order to test whether he was immune to trypanosomiasis, 806 days after the 9th paroxysm he was injected with 1 c.c. of blood from a pony which has been inoculated with camel surra. He had a high rise in temperature 8 days after inoculation; trypanosomes were found in the blood 30 days later; but no trypanosomes have again been found up to the present (31st January 1920) (128 days). The pony is in excellent condition. (*See* fig. 2 of the Plate.)

Been under observation 3 years 8 months and 10 days.

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st		6th	
2nd	1	7th	183
3rd	3	8th	29
4th	22	9th	87
5th	3	10th	837
6th	10		till 31-1-1920 (128 days) alive.

Three years 8 months 10 days under observation.

Pony No. 4.

Aged 3½ years when inoculated with 1 c.c. blood from a camel suffering from surra.

7 days after inoculation, trypanosomes appeared in the blood.

369 days after inoculation, last appearance of trypanosomes in the blood.

482 days after inoculation, pony showed signs of loss of control of the hind legs ; this partial loss of control over the hind legs continued till he died.

509 days after inoculation, pony was constipated and brain symptoms developed. The constipation was relieved by linseed oil. The pony walked round in a circle with head turned towards near side, he was off feed and continued to circle, falling down at intervals, till he died four days later.

513 days after inoculation, died.

Post mortem examination revealed nothing but a very bad-smelling blood-coloured fluid in the right frontal sinus.

In the early stages of the disease the paroxysms were frequent but gradually diminished in frequency. For 144 days before death trypanosomes were absent from the peripheral circulation.

The pony improved in condition and on the day that cerebral symptoms developed was in excellent condition.

Lived 1 year 4 months 26 days after being inoculated.

Pony No. 5.

Aged 4½ years when inoculated with 1 c.c. blood from camel suffering from surra.

8 days after inoculation, trypanosomes appeared in the blood.

289 days after inoculation, last appearance of trypanosomes in the blood.

415 days after inoculation, pony showed slight loss of control of hind legs.

468 days after inoculation, started walking round in a circle or took a few paces backwards and then in a circle ; when attempting to drink kept head on one side, and ate very little.

478 days after inoculation was constipated, the constipation was relieved by linseed oil.

494 days after inoculation, again constipated, relieved by a dose of linseed oil.

498 days after inoculation, cerebral symptoms developed ; pony kept head on one side, could not open jaws properly and ate practically nothing.

500 days after inoculation, there was a slight discharge from the right nostril ; he continued going round in a circle, falling down at intervals, till he died.

505 days after inoculation, died.

Post mortem examination revealed nothing but pus in the right frontal sinus.

The pony improved greatly in condition and was in excellent condition when cerebral symptoms developed.

In the early stages of the disease the paroxysms were frequent ; they became gradually less frequent and for 216 days before death took place, no trypanosomes were found in the blood.

Lived 1 year 4 months 16 days after being inoculated.

Pony No. 6.

Aged 5 years when inoculated with 1 c.c. of blood from camel suffering from surra.

9 days after inoculation, trypanosomes appeared in the blood.

195 days after inoculation, got colic which was relieved by treatment.

198 days after inoculation, developed cerebral symptoms ; moving head from side to side like a " weaver."

205 days after inoculation, commenced to go round in a circle and had only partial control over the hind legs ; the following day was acting unconsciously, throwing his head up and knocking it against the wall. He broke out into a profuse perspiration and fell down ; he lay perfectly quiet, dying 4 days later.

During the course of the disease the pony improved in condition and when cerebral symptoms developed was in excellent condition. Filaria was observed in the blood of this pony.

On *Post mortem* examination nothing abnormal was discovered.

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st 2nd	5	6th 7th	41
2nd 3rd	5	7th 8th	12
3rd 4th	1	8th 9th	4
4th 5th	1	9th 10th	5
5th 6th	18	10th 11th	42
		11th 12th	30

Death took place 16 days after last paroxysm. Lived 6 months 28 days after being inoculated.

Pony No. 7.

Aged 5½ years when inoculated with 1 c.c. of blood from a camel suffering from surra.

7 days after inoculation, trypanosomes appeared in the circulation.

43 days after inoculation, died.

The paroxysms were very frequent, the pony got weaker and weaker and lost condition ; death taking place 36 days after the first appearance of trypanosomes in the blood.

Post mortem examination revealed nothing but extreme emaciation.

Lived 43 days after being inoculated.

Pony No. 8.

This was a naturally infected case of surra and was obtained from a Camel Corps, being one of the ponies used by the Indian officers of the Corps. As this pony had been a considerable number of years with the Corps, it is probable it had contracted surra from the camels.

On being diagnosed to be suffering from surra it was handed over to me. It was in very fair condition and about ten years of age.

While under observation it was given the best of rations. It gradually lost condition and got weaker and weaker.

He showed no brain symptoms whatever but simply wasted away becoming so weak in the later stages of the disease that he was unable to stand.

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st . .	1	10th . .	2
2nd . .	1	11th . .	5
3rd . .	3	12th . .	5
4th . .	3	13th . .	1
5th . .	4	14th . .	1
6th . .	2	15th . .	5
7th . .	3	16th . .	1
8th . .	2	17th . .	5
9th . .	6	18th . .	8
10th		19th . .	4
		20th	died during the last paroxysm.

Lived 4 months 28 days.

Post mortem examination, nothing abnormal but extreme emaciation.

Pony No. 9.

Aged about 13 years when inoculated with 1 c.c. blood from camel suffering from surra.

7 days after inoculation, trypanosomes appeared in the blood.

457 days after inoculation, cerebral symptoms developed, the pony showing a tendency to fall over backwards.

465 days after inoculation, was constipated, relieved by treatment.

468 days after inoculation, stood with head down and only moved when forced to ; off feed.

470 days after inoculation, commenced to circle round towards the left.

477 days after inoculation, died.

This pony improved greatly in condition and was in excellent condition when cerebral symptoms appeared.

Post mortem examination revealed nothing abnormal.

Paroxysm	No. of days interval between paroxysms	Paroxysm	No. of days interval between paroxysms
1st		10th	
	2		5
2nd		11th	
	4		1
3rd		12th	
	1		5
4th		13th	
	3		7
5th		14th	
	11		8
6th		15th	
	5		2
7th		16th	
	2		26
8th		17th	
	9	18th	45
9th		19th	
	5		8
10th		20th	29

Died 257 days after last paroxysm.

Lived 1 year 3 months and 20 days after being inoculated.

Pony No. 10.

About 13 years old when inoculated with 1 c.c. blood from camel suffering from surra.

4 days after inoculation, trypanosomes appeared in the blood.

232 days after inoculation, developed colic which was relieved by treatment.

403 days after inoculation, partial paralysis of the hind legs.

410 days after inoculation, died.

This pony improved in condition, and was in good condition when he developed partial paralysis of the hind legs. He finally lost all power of the hind legs and was unable to get up.

On *post mortem*, nothing abnormal.
Lived 1 year 2 months 13 days after being inoculated.

Summary.

No. of Pony	Age.	Time under observation			Result	Remarks.
		Years	Months	Days		
1	8 months	2	8	28	died	Paralysis of hind legs.
2	1 year .	3	2	19	alive	Showed no brain symptoms.
3	6 months	3	8	10	alive	Showed no brain symptoms.
4	3½ years	1	4	26	died	1. Partial paralysis of hind legs. 2 Cerebral symptoms. 3. Constipation.
5	4½ years	1	4	16	died	1. Parti paralysis of hind legs. 2. Constipation. 3. Brain symptoms.
6	5 years .	0	6	28	died	1. Colic. 2. Cerebral symptoms. 3. Partial paralysis of hind legs.
7	5½ years .	0	0	43	died	1. Lost condition rapidly. 2. Got gradually weaker. 3. Showed no other symptoms.
8	10 years .	0	4	28	died	1. Lost condition. 2. Got gradually weaker. 3. Showed no other symptoms.
9	13 years .	1	3	20	died	1, Cerebral symptoms. 2. Constipation.
10	13 years .	1	2	13	died	1. Colic. 2. Paralysis of hind legs.

Remarks. From these experiments it would appear that :—

(1) Ponies inoculated with camel surra, often do not lose condition and do not always die from gradual emaciation ; on the contrary, they frequently, when not worked, put on condition and live for several years.

(2) In some cases, in the later stages of the disease the intervals between the paroxysms may be very long, extending over more than a year.

(3) Constipation, partial paralysis of the hind legs, and brain symptoms are frequently met with.

(4) The fact that paralysis of the hind legs occurred in several of these cases is of interest, owing to the fact, that there have been cases of ponies attached to Camel Corps that have been reported to have died from paralysis. It is not impossible that these ponies really died from camel surra.

Buffalo No. 1.

Aged about 6 years.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

144 days after inoculation, trypanosomes were found in the blood, trypanosomes were not again observed; he died from Hæmorrhagic Septicæmia 328 days after being inoculated with surra.

163 days after being inoculated with surra a small quantity of blood was injected into a rabbit and a guinea pig—trypanosomes were found in the blood of the rabbit and guinea pig after 40 and 9 days respectively.

Buffalo No. 2.

Aged about 5 years.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

The blood of this animal was examined daily for 841 days but no trypanosomes were found in the blood.

163 days after the buffalo was inoculated with surra, a small quantity of blood was injected into a rabbit and guinea pig, trypanosomes were found in the blood of the guinea pig after 19 days, and in the blood of the rabbit after 23 days.

The buffalo remained in perfect health for the 841 days he was kept under observation, he was then discontinued.

Buffalo No. 3.

Aged about 6 years.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

No trypanosomes were observed in the blood; daily blood examination was made for 803 days, when he died from rupture of the diaphragm.

172 days after the buffalo was inoculated with surra, a small quantity of blood was injected into a guinea pig and rabbit; after 10 days trypanosomes were found in the blood of the guinea pig, and in the blood of the rabbit after 18 days.

Buffalo No. 4.

Aged about 5 years.

Inoculated with 1 c.c. blood from camel suffering from surra.

Trypanosomes were only once observed (11 days after inoculation) in the blood, though daily blood examination was made for 841 days.

The buffalo remained in perfect health and after 841 days was discontinued.

The blood of this animal was infective after 163 days as was proved by the injection of blood into rabbits and guinea pigs.

100 days after inoculation 1 rabbit was injected with a small quantity of blood ; trypanosomes were found in the blood of the rabbit 25 days after being injected.

163 days after inoculation 1 rabbit and 1 guinea pig were injected with a small quantity of blood ; trypanosomes appeared in the blood of the rabbit after 33 days ; the guinea pig died 42 days after being injected without trypanosomes appearing in the blood.

Buffalo No. 5.

Aged about 5 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

Seven days after inoculation, trypanosomes found in the blood. This buffalo has been under observation for 70 days only and up to the present trypanosomes have not again been found in the blood.

Improving in condition.

Buffalo No. 6.

Aged about 6 years.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

9 days after inoculation, trypanosomes were found in the blood and this paroxysm lasted 5 days.

20 days after inoculation, trypanosomes were again found in the blood.

42 days after inoculation, trypanosomes were again found in the blood.

This buffalo has only been under observation 70 days.

Improving in condition.

Summary.

Buffalo No.	Age	Time under observation	Result
1	About 6 years	328 days	Died from Hæmorrhagic Septicæmia.
2	,, 5 ,,	841 ,,	Lived (discontinued).
3	,, 6 ,,	803 ,,	Died from rupture of the diaphragm.
4	,, 5 ,,	841 ,,	Lived (discontinued).
5	,, 5 ,,	70 ,,	Alive.
6	,, 6 ,,	70 ,,	Alive.

Remarks :—

(1) Buffaloes do not die from inoculated camel surra.

(2) Trypanosomes do not frequently occur in the blood.

(3) Though no trypanosomes may be found in the blood, the blood is nevertheless infective, as is demonstrated in the case of Buffaloes Nos. 2 and 3; although no trypanosomes were found in their blood, the blood 163 and 172 days after inoculation was infective for rabbits and guinea pigs. This distinctly proves that buffaloes can act as a dangerous reservoir of surra; and as tabanidæ are frequently seen sucking the blood of these animals, buffaloes must not be forgotten as a probable reservoir of the disease.

(4) Buffaloes do not lose condition when inoculated with camel surra.

Dog No. 1.

Aged about 2 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

On the 9th day after inoculation, trypanosomes appeared in the peripheral circulation. The dog became very thin, developed opacity of the cornea and died 61 days after inoculation. The paroxysms during the course of the disease were very frequent.

On *post mortem* nothing abnormal but extreme emaciation.

Dog No. 2.

Aged about 2 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 23rd day after inoculation. The paroxysms became very frequent; he developed opacity

of the cornea and died in state of extreme emaciation, 55 days after inoculation.

On *post mortem* nothing abnormal but extreme emaciation.

Dog No. 3.

Aged about 2 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 5th day after inoculation, the paroxysms were very frequent, he became very weak, and died in an emaciated condition 37 days after inoculation.

On *post mortem* nothing abnormal but extreme emaciation.

Dog No. 4.

Aged about 2 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 6th day after inoculation.

This dog did not lose condition rapidly. The paroxysms became very frequent and he died on the 56th day after inoculation.

On *post mortem* nothing abnormal but emaciation.

Dog No. 5.

Aged about 3 years.

Inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes appeared in the peripheral circulation on the 6th day after inoculation. The paroxysms became very frequent, the dog lost condition, developed opacity of the cornea and died in a state of extreme emaciation 54 days after inoculation.

On *post mortem* nothing abnormal but extreme emaciation.

Summary.

Dog No.	Age	Time under observation	Result
1	About 2 years	61 days	Died.
2	„ 2 „	55 „	Died.
3	„ 2 „	37 „	Died.
4	„ 2 „	56 „	Died.
5	„ 3 „	54 „	Died.

Remarks. From these experiments it would appear that:—

(1) Dogs inoculated with camel surra show very little resistance to the disease and die within 2 months.

(2) They become greatly emaciated and frequently show eye lesions.

GOAT No. 1.

Aged about 1½ years.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

107 days after inoculation, trypanosomes (1 in specimen) were observed in the blood, but were not again found, though the blood of this goat was daily examined for 988 days.

309 days after inoculation, a small quantity of blood was injected into a rabbit and a guinea pig; trypanosomes were observed in the blood of the rabbit but not in that of the guinea pig.

This goat did not lose condition, fed well and appeared in normal health up to the time he was discontinued 988 days after being inoculated with surra.

GOAT No. 2.

Aged about 1½ years.

This goat was inoculated with 1 c.c. blood from a pony, belonging to a Camel Corps which had been found to be suffering from surra; whether this pony contracted surra from the camels of the Corps cannot be definitely stated, but taking into consideration that the pony was one of the ponies used by the Indian officers of the Camel Corps and had been a considerable time with the Camel Corps it is probable, that the pony contracted surra from the camels of the Corps.

Trypanosomes were never observed in the blood of this goat though daily examination of the blood was made for 999 days.

To test whether the blood of this goat was infective the following tests were carried out.

250 days after inoculation 1 c.c. blood from goat inoculated into rabbit; after 25 days blood of rabbit positive.

250 days after inoculation 1 c.c. blood from goat inoculated into guinea pig, blood of guinea pig negative.

321 days after inoculation 1 c.c. blood from goat inoculated into rabbit, after 11 days blood of rabbit positive.

321 days after inoculation 1 c.c. blood from goat inoculated into guinea pig, after 19 days blood of guinea pig positive.

This goat did not lose condition but kept in normal health till it was discontinued 999 days after it was inoculated.

Summary.

Goat No.	Age	Time kept under observation	Result
1	1½ years	999 days	Lived (discontinued).
2	1½ ,,	999 ,,	Lived (discontinued).

Remarks :—

(1) Goats when inoculated with camel surra do not die (in the case of goat No. 2 the goat was inoculated with blood from a pony which probably had contracted surra from camels).

(2) They do not lose condition.

(3) Trypanosomes are seldom found in the blood of goats inoculated with surra.

Trypanosomes were only found in one, once (107 days after inoculation).

(4) Though the trypanosomes may not be found in the blood of the goats, the blood is nevertheless infective ; in the case of one goat it was proved to be infective 309 days after the goat had been inoculated and in the case of the other goat 321 days after inoculation.

SHEEP No. 1.

Aged about 2 years when inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes were never found in the blood of this sheep, but the blood was found infective when injected into a rabbit and guinea pig.

This sheep rapidly lost condition and died 192 days after inoculation in an extremely emaciated condition.

One day before death took place the sheep suffered from acute diarrhœa.

The day before, death, a small quantity of blood was injected into a rabbit and guinea pig, trypanosomes were found in the blood of both.

On *post mortem* nothing abnormal but extreme emaciation.

SHEEP No. 2.

Aged about 2 years when inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood 46 days after inoculation but were not found again in the blood.

The sheep became very weak and emaciated; died 384 days after being inoculated.

A small quantity of blood from the sheep, 271 days after it had been inoculated with surra, was injected into a rabbit and guinea pig, neither developed surra though their blood was examined for 43 days.

On *post mortem* nothing abnormal but extreme emaciation.

Sheep No. 3.

Aged about 2 years when inoculated with 1 c.c. of blood from a camel suffering from surra.

20 days after inoculation, trypanosomes were found in the blood.

399 days after inoculation, trypanosomes again found in the blood.

409 days after inoculation, a small quantity of blood was injected into a rabbit and guinea pig, trypanosomes were found in the blood of the rabbit 25 days later and the guinea pig died 21 days after being inoculated, without any trypanosomes being found in the blood.

569 days after inoculation the sheep had become very emaciated and died.

On *post mortem* nothing abnormal but extreme emaciation.

Sheep No. 4.

Aged about 2 years when inoculated with 1 c.c. blood from a camel suffering from surra.

24 days after inoculation, trypanosomes appeared in the blood, but were not again observed before death took place. Five days before death, the sheep became constipated and fed only fairly. It had become very weak and thin and died 88 days after being inoculated.

On *post mortem* nothing abnormal but extreme emaciation.

Sheep No. 5.

Aged about 2 years when inoculated with 1 c.c. blood from a camel suffering from surra.

Trypanosomes appeared three times in the peripheral circulation, 9, 21 and 171 days after inoculation.

Death took place 632 days after inoculation.

600 days after inoculation this sheep had become very weak, and was in an extremely emaciated condition when it died.

A small quantity of blood was injected into a rabbit and guinea pig 123 days after the last appearance of trypanosomes in the blood ; trypanosomes were found in the peripheral circulation of the rabbit and guinea pig after 20 and 27 days respectively.

Post mortem nothing abnormal but extreme emaciation.

Summary.

Sheep No.	Age	Time under observation	Result
1	About 2 years	192 days	Died.
2	„ 2 „	384 „	Died.
3	„ 2 „	569 „	Died.
4	„ 2 „	88 „	Died.
5	„ 2 „	632 „	Died.

Remarks:—

(1) Sheep are susceptible to inoculated camel surra.

(2) The trypanosomes are very infrequently found in the peripheral circulation, but the blood is infective.

(3) Sheep become gradually emaciated as the result of the disease and finally die.

(4) Sheep and goats are not so dangerous as buffaloes, from the point of view of acting as reservoirs, as they are seldom attacked by tabanidæ.

Rabbit No. 1.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 9th day after inoculation.

Showed the usual eye symptoms of surra in rabbits and died 180 days after inoculation.

Rabbit No. 2.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 10th day after inoculation.

Died 84 days after inoculation.

Guinea Pig No. 1.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 4th day after inoculation.

Died 17 days after inoculation.

Guinea Pig No. 2.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 3rd day after inoculation.

Died 75 days after inoculation.

Guinea Pig No. 3.

Inoculated with 1 c.c. of blood from a camel suffering from surra.

Trypanosomes appeared in the blood on the 4th day after inoculation.

Died 68 days after inoculation.

Summary.

No.	Time under observation	Result
Rabbit 1 . . .	180 days.	Died.
Rabbit 2 . . .	84 „	Died.
Guinea pig 1 . . .	17 „	Died.
Guinea pig 2 . . .	75 „	Died.
Guinea pig 3 . . .	68 „	Died.

Remarks. Guinea pigs and rabbits are susceptible to inoculated camel surra.

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